

Claims

1. A method for imaging a file system in a partition comprising a plurality of allocation units, the method comprising:

 copying each allocation unit occupied by a file of the file system to a locally-stored image file, wherein the locally-stored image file is within the same partition as the file system; and

 adding a directory map to the locally-stored image file that associates copied allocation units in the locally-stored image file with names of corresponding files from the file system.
2. The method of claim 1, wherein copying comprises compressing at least a subset of the allocation units.
3. The method of claim 1, wherein copying comprises:

 maintaining a record of a pre-imaging state of the file system; and

 copying only allocation units occupied by files included within the pre-imaging state of the file system.
4. The method of claim 1, wherein adding comprises grouping within the locally-stored image file the copied allocation units for individual files of the file system.

5. The method of claim 1, wherein copying comprises storing within the locally-stored image file one or more attributes related to each file, wherein the attributes are selected from the group consisting of ownership attributes, access-control attributes, timestamp attributes, archival attributes, indexing attributes, encryption attributes, and compression attributes.
6. The method of claim 1, further comprising marking a beginning point of the locally-stored image file to assist in locating the locally-stored image file in the event of directory area corruption.
7. The method of claim 6, wherein marking comprises storing a unique beginning-of-image marker at an initial allocation unit occupied by the locally-stored image file.
8. The method of claim 6, wherein marking comprises storing at a predetermined area of the partition a location of an initial allocation unit occupied by the locally-stored image file.
9. The method of claim 1, further comprising protecting the locally-stored image file from accidental deletion or modification.

10. The method of claim 9, wherein protecting is selected from the group consisting of:

providing a filter driver that intercepts and denies requests to access the locally-stored image file; and

initiating a process that opens and thereby locks the locally-stored image file.

11. A method for restoring a file system to a partition comprising a plurality of allocation units, the method comprising:
- accessing a locally-stored image file within the partition, the locally-stored image file comprising a directory map and file data for a plurality of files;
 - initializing at least a subset of the allocation units of the partition not occupied by the locally-stored image file including one or more allocation units used for a directory area of the partition;
 - extracting the file data into the initialized allocation units without disturbing the locally-stored image file; and
 - creating a new directory area for the partition using the directory map.
12. The method of claim 11, wherein the directory map associates names for the plurality of files with corresponding portions of the file data, and wherein creating comprises generating a new directory area for the partition that associates the file names with the extracted file data.
13. The method of claim 11, wherein creating comprises adding an indication of the locally-stored image file to the new directory area.
14. The method of claim 11, wherein extracting comprises decompressing at least a subset of the file data.

15. The method of claim 11, wherein the directory map indicates at least one attribute for a file, and wherein creating comprises setting the at least one attribute for the file in the directory area, wherein the at least one attribute is selected from the group consisting of an ownership attribute, an access control attribute, a timestamp attribute, an archival attribute, an indexing attribute, an encryption attribute, and a compression attribute.

16. The method of claim 11, wherein accessing comprises searching for an allocation unit containing a unique beginning-of-image marker for the locally-stored image file.

17. The method of claim 11, wherein accessing comprises reading from a predetermined area of the partition a location of an initial allocation unit of the locally-stored image file.

18. The method of claim 11, further comprising defragmenting the locally-stored image file within the partition prior to extracting the file data.

19. The method of claim 11, further comprising protecting the locally-stored image file from accidental deletion.

20. The method of claim 19, wherein protecting is selected from the group consisting of:

providing a filter driver that intercepts and denies requests to access the locally-stored image file; and

initiating a process that opens and thereby locks the locally-stored image file.

21. An apparatus for imaging a file system in a partition comprising a plurality of allocation units, the apparatus comprising:
- a local imager to copy each allocation unit occupied by a file of the file system to a locally-stored image file, wherein the locally-stored image file is within the same partition as the file system; and wherein the local imager is to add a directory map to the locally-stored image file that associates copied allocation units in the locally-stored image file with names of corresponding files from the file system.
22. The apparatus of claim 21, wherein the local imager is to compress at least a subset of the allocation units copied to the locally-stored image file.
23. The apparatus of claim 21, wherein the local imager is to maintain a record of a pre-imaging state of the file system and to copy only allocation units occupied by files included within the pre-imaging state of the file system.
24. The apparatus of claim 21, wherein the local imager is to group within the locally-stored image file the copied allocation units for individual files of the file system.
25. The apparatus of claim 21, wherein the local imager is to store within the locally-stored image file one or more attributes relating to at least one file of the file system, wherein the file attributes are selected from the group consisting of ownership attributes,

access-control attributes, timestamp attributes, archival attributes, indexing attributes, encryption attributes, and compression attributes.

26. The apparatus of claim 21, wherein the local imager is to mark a beginning point of the locally-stored image file to assist in locating the locally-stored image file in the event of directory area corruption.

27. The apparatus of claim 26, wherein the local imager is to mark the beginning point by storing a unique beginning-of-image marker at an initial allocation unit occupied by the locally-stored image file.

28. The apparatus of claim 26, wherein the local imager is to mark the beginning point by storing at a predetermined area of the partition a location of an initial allocation unit occupied by the locally-stored image file.

29. The apparatus of claim 21, further comprising a protection component to prevent accidental deletion or modification of the locally-stored image file.

30. The apparatus of claim 27, wherein the protection component is selected from the group consisting of:

- a filter driver that intercepts and denies requests to access the locally-stored image file; and
- a process that opens and thereby locks the locally-stored image file.

31. An apparatus for restoring a file system to a partition comprising a plurality of allocation units, the apparatus comprising:

an image locator to find a locally-stored image file within the partition, the locally-stored image file comprising a directory map and file data for a plurality of files;

a media formatter to initialize at least a subset of the allocation units of the partition not occupied by the locally-stored image file including one or more allocation units used for a directory area of the partition;

a data extractor to extract the file data into the initialized allocation units without disturbing the locally-stored image file; and

a directory area builder to build a new directory area for the partition using the directory map.

32. The apparatus of claim 31, wherein the directory map associates names for the plurality of files with corresponding portions of the file data, and wherein the directory area builder is to generate a new directory area for the partition that associates the file names with the extracted file data.

33. The apparatus of claim 31, wherein the directory area builder is to add an indication of the locally-stored image file to the new directory area.

34. The apparatus of claim 31, wherein the data extractor is to decompress at least a subset of the file data.

35. The apparatus of claim 31, wherein the directory map indicates at least one attribute for a file, wherein the directory area builder is to set the at least one attribute of the file in the directory area, and wherein the at least one attribute is selected from the group consisting of an ownership attribute, an access control attribute, a timestamp attribute, an archival attribute, an indexing attribute, an encryption attribute, and a compression attribute.

36. The method of claim 31, wherein the image locator is to search for an allocation unit containing a unique beginning-of-image marker for the locally-stored image file.

37. The method of claim 31, wherein the image locator is to read from a predetermined area of the partition a location of at least a first allocation unit of the locally-stored image file.

38. The apparatus of claim 31, further comprising an image defragmenter to defragment the locally-stored image file within the partition before the data extractor extracts the file data.

39. The apparatus of claim 31, further comprising a protection component to prevent accidental deletion of the locally-stored image file.

40. The apparatus of claim 39, wherein the protection component is selected from the group consisting of:

- a filter driver that intercepts and denies requests to access the locally-stored image file; and
- a process that opens and thereby locks the locally-stored image file.

41. A method for localized imaging and restoration of a file system in a partition comprising a plurality of allocation units, the method comprising:

- copying each allocation unit occupied by a file of the file system to a locally-stored image file, wherein the locally-stored image file is within the same partition as the file system; and
- adding a directory map to the locally-stored image file that associates copied allocation units in the locally-stored image file with names of corresponding files from the file system.
- locating the locally-stored image file within the partition;
- initializing at least a subset of the allocation units of the partition not occupied by the locally-stored image file including one or more allocation units used for a directory area of the partition;
- extracting file data from the locally-stored image file into the initialized allocation units without disturbing the locally-stored image file; and
- creating a new directory area for the partition using the directory map.

42. A computer program product comprising program code for imaging a file system in a partition comprising a plurality of allocation units, the computer program product comprising:

program code for copying each allocation unit occupied by a file of the file system to a locally-stored image file, wherein the locally-stored image file is within the same partition as the file system; and

program code for adding a directory map to the locally-stored image file that associates copied allocation units in the locally-stored image file with names of corresponding files from the file system.

43. A computer program product comprising program code for restoring a file system to a partition comprising a plurality of allocation units, the computer program product comprising:

program code to access a locally-stored image file within the partition, the locally-stored image file comprising a directory map and file data for a plurality of files;

program code to initialize at least a subset of the allocation units of the partition not occupied by the locally-stored image file including one or more allocation units used for a directory area of the partition;

program code to extract the file data into the initialized allocation units without disturbing the locally-stored image file; and

program code to create a new directory area for the partition using the directory map.